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**PROGRESS REPORT ON DATA PROCESSING AND ELINT ANALYSIS
OF SYSTEM FOUR TAPES ACCRUING FROM
MISSIONS 2037, 4065, 4066 AND 4069**

1. To speed up the final analysis of the above tapes, NTTC and OSI agreed to combine their manpower and facilities.

2. To accomplish the job five steps are necessary as follows:

a. Copy each channel of the 14-channel tape onto a three channel tape, one channel of which carries the signals, one channel a voice annotation of the time of each lock-on, the "Nixie" or digital number indicating the radio frequency and whether left or right antenna and the third channel carries the automatic gain control (AGC) information.

b. Playback the three channel tapes at a regular three channel analysis position reading out where possible the pulse repetition frequency (PRF) the scan rate and other general characteristics of the signal, recording this information on a special chart suitable for future copying on an IBM card.

c. Sorting out this information into three groups; "Known" types of signals, "Unknown" types and a third group designated "indeterminate" in which are grouped all signals, noises and all other odd ball hits upon which not enough data was present to identify them as being valid signals or whether resulting from equipment malfunction.

d. Using every facility from further analysis, including scope photography, to collateral information in an attempt to transfer the indeterminate groups to either knowns or unknowns.

e. Write a report on the above for submission to a group charged with the responsibility of determining the intelligence value of the analyzed ELINT data.

3. As there is only one set of M racks in the area and this is located at the OSI ELINT laboratory it was agreed that OSI would do all the copying work. It was also agreed that NTPC would undertake the complete readout of two of the missions, namely 2037 and 4065, while OSI would make a complete readout of 4066 and 4069.

4. Phase a (copying) has been completed for all four missions. This breakdown of the 14-channel tapes resulted in some 65 3-channel reels of single channel for initial analysis and 33 reels of double channel for study of simultaneous and identical prf on two channels.

a. Phase b (initial readout) has been completed for Mission 4065 and 4069 and partially completed for 4066.

b. Phase c has been completed for Missions 4065 and 4069.

c. Phase d which is the most difficult is underway for Missions 4065 and 4069. This phase is the most time-consuming and possibly unrewarding, although necessary for a complete readout.

d. Phase e has not been started.

5. It is evident at this time that the time necessary to complete the readout of all four missions has been underestimated because of equipment difficulties and the general lack of knowledge of the problems involved in a complete readout of such a versatile intercept sampling system.

6. To give an approximate idea of what has been accomplished so far there was an approximate total of 5800 intercepts on the two missions of known radar, 1250 intercepts of valid signals which have not yet been identified and 250 intercepts in the indeterminate class. These figures will be changed somewhat in the final report.

7. It is estimated that the 1250 unknown intercepts represent signals from approximately 80-100 different radars and that we may be able to identify 50 % of these. Of the 250 indeterminate signals we may be able to eliminate 50% of these as equipment malfunction. No estimate can be made of the time involved or the probability of tying down the remaining 125 odd ball hits. It is probable that not more than 10% of these can be identified.

8. To reduce Missions 4069 and 4065 to the status indicated in the preceding paragraph will take one more week. In other words the completion of two of these missions for ELINT readout will have taken six weeks. Inasmuch as all copying has been finished and to the fact that 2037 and 4066 were not as productive of signals it is estimated that they can be completed in from 3 to 4 weeks after 4065 and 4069 are completed.

9. Conclusions

a. System IV is a versatile sampling system.

b. The analysis has disclosed many "bugs" in the system which should be immediately rectified. As this is a prototype model this is somewhat to be expected and action has already been taken on many of the items.

c. The analysis equipment for special use in reading out System IV has also been subject to many discrepancies and failure which has caused delay in copying and readout procedures. Many of these have now been rectified.

d. System IV has a tremendous range capability.

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e. The accuracy of the information has been proven by the interception of many friendly radars of which complete information on parameters is known and is comparable to the analyzed information obtained from the missions.

f. An indication of the amount of information available is indicated by one case in which were intercepted in one thirty second lock. This also indicates the difficulty in reading out the tapes from this mission as it took the analyst 15 minutes to sort out and mark correctly the prf information available on this 30 second lock-on.

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g. The experience gained in this first readout of System IV will result in much shorter time for future analysis.

h. It is intended that a report be prepared on Missions 4065 and 4069 before completing Missions 2037 and 4066 and then prepare a separate report for 2037 and 4066.